Queer Influences of the Emotions on the Hair A Novel Assertion as to the Hair as an Index of the Time and Nature of Illuesses.

From the St. Louis Globe Democrat. BERLIN, Dec. 12,-A fact not generally recognized, and the importance of which is wofully misunderstood by the majority of thosewho have looked into the matter, is the old truth that the bair is the barometer of a person's health and character. History tells us that Louis the Severe of Bayaria became gray overnight after murdering a number of vassals whom he had wrongfully suspected of intimacy with his wife. He died shortly afterward, remorse having consumed his virals. Bir Thomas More, Henry VIII,'s great Chancellor, and Marie Antoinette are said to have turned gray in the night, after being informed of their doom. No one doubted these occurrences until the new school of physiologists, being unable to account for the phenomena, declared them unworthy of belief. And this in the face of the fact that the experiences of

many contemporaries supported the theory. A friend of mine, a strong, healthy man, having endured a notable change in the color of his hair during the period of our university studies. I determined that the subject under discussion deserved the fullest investigation, and consequently, after entering upon the practice of my profession, I devoted considerable time to research in the premises, and, in fact, have never lost sight of the questions.

Before introducing examples it will be necessary to explain the nature and compesition of the hair. The hair consists of a root, s shaft, and a tip, the latter two being the projecting parts. Its substance is composed of a borny material containing the pigment granules, which are developed in the root, and the color of which depends on the presence of a peculiar oil sepla tint in dark, blood red in red. yellowish in fair hair. While it was generally admitted that the hair of all mammalia had nerve connection, a similar state of affairs has been denied with reference to human hair until quite recently. The past lack of knowledge accounts fort he skepticism of the modern physiologists above mentioned. Their argument was logical: If nerve activity did not reach the hair root, it could not affect it,

Let us settle one more point, the cause of gray hair in advanced life. The grayness commences at the hair bulb, where the cells are produced, and rises upward to the tip. It is caused by a deficiency and the degeneration respectively of the pigment matter. The coloring stuff either gives out or retrogrades. The chemist can perform the same for you in an incredibly short time by simply soaking your raven or arburn locks removed from the head in alcoholographs.

chemist can perform the same for you in an incredibly short time by simply soaking your raven or anburn locks removed from the head in alcohol or ether.

Aside from the case above mentioned relating to a friend, an instance of accidental hair bleaching happening in Switzerland came under my notice shortly after my investigations were begun. A peasant boy of 18 years had undertaken to rob an eagle's nest hanging over a mountain precipice of its young, his comrades dangling him on a rope. To protect himself against possible attacks by the old birds, he carried a long sword.

The boy had captured his prize and was about to be pulled up when the parcats of the little ones, attracted by their brood's cries, attacked him with claws and beaks. To ward them off the young fellow struck out promiscuously with his sword, and, perceiving a certain pull on the rope, saw that he had hit the hawser, which hung only on one strand. Terror seized him; he might be plunged in the obysany second. a prey to the ferocious feathered flends; there seemed no hope whatever. still his friends, by their quick and well-calculated action, succeeded in handing the doomed boy safely, and a drink of kirsch soon revived him. But when he took off his cap to throw it, in Joyons fashion, into the air, it was seen that his abundant brown hair had turned white from root to tip.

Dr. Landois of the Greifswald Clinic had a pattent suffering from delirium tremens, who saw rats and other animals constantly running about him. He was extremely nervous, and when, on the fourth night after his arrival in the institute, one of the physicians entered the ward suddenly, he became so terrified that he wards underly a patient sand medical attendants observed a great change in the appearance of the man. Three-fourths of his hair and beard had become gray. The celebrated Dr. Virchow, and gave it as his opinion that degeneration of the nument matter had nothing to do with the change.

The French physician Raymond had a female. The French physician Raymond had a female patient suffering from neuralgia. The lady's hair was let black. After an especialty bad attack of pain the hair took on a reddish hue, and after some hours faded into gray. The change occurred within a space of five hours.

In the above quoted cases the hair of the parties never resumed its natural color.

Dr. Alikert tells of a case where a woman's hair changed from black to blond after a fever incident to childbirth. The State InsaneAsylum at Dalborf, near Berlin, harbors at the present time a female idiot, aged 13, who experiences alternating its of comparative quietnde and rest and such in which she exhibits terrible ex-

at Dalkiorf, near Berlin, barbars at the present time a female idlot, aged 13, who experiences alternating fits of comparative quictude and rest and such in which she exhibits terrillic excitement and extreme nervousness. On her quiet days her skin is dry and her face pale, while during her periods of nervous excitement she displays much energy; then her checks are red and her skin is generally heated. The color of her hair changes almost visibly with the teaperature of her body; it is a yellow blonde, while her skin remoins dry and clammy, and becomes auburn when she is excited. The change occurs within forty eight hours, and on the third day is at its height. Several medical reports set forth that patients suffering from disease of the nerves in the head became cray at the very spots where pains manifested themselves. This change, in the majority of cases took place slowly; in some cases it occurred over night.

Br. Reinhard noticed several cases in which parties suffering from consemption experienced a change in the color of the bair from light to black. He also knows of a blonde lady who lost her hair after baying had typhus. After several months a new growth of hair appeared, but it was jet black.

A young ged turned partially gray during the period sle was suffering from chlorosis tyreen sleknesse. She had very long hair, dark brown in color, which, as the illness intensified, became lighter and lighter at the roots and the first two inches above the scalp, until that portion was show white. It was this circumstance that frightened the young lady's parents and made them seek medical advice. The girl was cared by energetic remedies, and this, too, stopped the progress of her nair's degeneration. Her head is now a curosity. If she wears a hat it gives the appearance of an old woman; without a hat one finds the crowning giory of youth topping off the snow of age.

A young man, its years old, serving in the German army as an aspirant for a Lieutenantialip, had been discovered in the act of hinchenical newly d

investigations, grew only at the rate of one-fourth of a line ser day. Taking this for the basis of my examination, it was easy to deter-mine on what particular days certain portions of the hair I cut from his head had formed. I found that, beginning with the particles formed on July 5 and terminating with the fornations of July 24, the hair had changed from brown to reddish and light bluist thus, increasing in intensity until under the micro-scope it appeared almost a vellowish white. Recourse to the young fellow's diary showed that during that period he had gambled, los-ing stoodily. Consequently bis nervous ex-citement grew apase. On the 24th it reached its height, when the rascal found himself vis-a-vis of Nemesis personified by his superior of-ficer. After that followed a period of quiet resignation, during which time the hair form-ations assumed their natural color, but as the

emplified in the sensation commonly called "goose flesh" or goose skin. It is endured as a consequence of sudden fright or terror. The skin of the head for the moment loses its smoothness, the hair roots elevate, the hair itself becomes rigid, the color of the skin is pale. Medical science explains this phenomenon as follows: The hair contains certain muscular fibre cells, which arise in the upper part of the corium. As each hair enters the skin obliquely, forming an acute angle with the surface, and as the muscle lies in the corresponding obtuse angle, its contraction erects the hair, that is, makes it stand un.

These goose skin sensations were observed in a lesser degree in certain cases where they could not be accounted for as the consequence of sudden terror, although the nervous tendency predominated.

A medical expert reports that the curly locks

a lesser degree in certain cases where they could not be accounted for as the consequence of sudden terror, although the nervous tendency predominated.

A medical expert reports that the curly locks of three young girls belonging to a family which is predisposed to nervousness straighten out every time when they become exhausted by overwork or pleasure. Thus it happens that if they go to a ball they enter upon the pleasure straight-haired; after dancing a few times their locks begin to form again, and before the festivity is half over the three pretty heads are covered with ringlets. Investigation has proved that these girls have to work particularly hard on the days preceding the balls. They make their own dresses, do their own housework, &c. The anticipation of pleasure may also have something to do with increasing their nervous condition. Similar observations have been made in the case of a 2-year-old girl predisposed to insomnia by nervous excitement. She has long, silky blond locks, that straighten out if the child experiences any sensation of a frightful nature. That having passed, the hair is seen to draw up into ringlets.

The microscope does not explain the lastmentioned phenomena; it shows, however, the nature of the causes that make the hair appear white as the consequence of fear, distress, or any strong mental excitement. As already stated, the sensation is apparently due to degeneration of the pigment matter. According to my own investigations it is occasioned by air bubbles arising in the shart of the hair, and completely enveloping the color particles. How this process comes about science has not yet discovered. It is an open question whether the air is admitted from outside or whether the last find is the result of decomposition in the interior of the hair shaft or roots.

Another explanation may be mentioned here which says the process may result from the throwing off of some fluid or acid that chemically destroys the coloring matter.

Thoughout knowledge of the baromater qualities of the hair

healthy condition.

I know many women who live through all sorts of distress and troubles without a hair in their heads changing color, while others likewise affected turned gray at the sides and the fore part of their head at an early age and in a short time.

wise affected turned gray at the sides and the fore part of their head at an early age and in a short time.

What does it prove? Simply that the first mentioned parties retained their equilibrium, their joyons disposition, while their friends gave way under the burden.

Another point: To know the exact time of the beginning of an illness is most important in arriving at the diagnosis. I have ascertained the desired discriminating knowledge in cases of fever—when typhus, scarlet, and lung affections were suspected—in cases of brain apoplexy and of insanity by the following simple method. When I was first called in to the patient I made a baid spot on the top of his or her head or at the sides by removing a tuft of hair. A week and a half or two weeks later I cut the new grown hair, and by-microscopical investigation of the two bunches of hair the beginning as well as the progress of the disease was easily determined. In the same manner a threatening illness may be anticipated or even forestalled by proper observation of a person's bair.

CORRECT CORSETS.

Special Styles for Golf, Cycling, Skating, and for the Pat.

The latest corsets and corset bodies of every description, though leaning toward useful lines, are all so daintily white and coquettishly trimmed that it looks as if the new woman were not such a handsome creature after all. At one of New York's best known makers were learned some of the latest secrets of corsets.

Few women who dress well now buy their stays ready made; they have them fashioned to order according to exactions of individual fig-ures. For less expensive tastes, for corsets made to order are naturally dearer than others, there are ready made ones of course; but ever these are tried as carefully to the figure as a boot to the foot, and out of twenty of the same number perhaps only one will be declared a perfect fit. Then there seem to be cornets for every occasion under the sun, for cycling, golf, and riding, for high dress and for lounging. And so perfectly are they all made that there is no effect of slovenliness, so that if blessed with any sort of a figure the same girl may wear all kinds and still seem the trim-girdled being man

loves to know. A corset for a figure that needs to be held in a little, and yet leave the blessed right to breathe, is a short one of unlined coutille, handmade, and with the seams of the front running toward the steels in a distinct V. This gives an easy roundness to the waist and a swell to the bust, which, however, is held in snugly by a frill of lace, run with narrow ribbon, at the corset top. At the bottom this model is only slightly , and it is longer in proportion from the waist line down than from the waist up, and at the sides there are elastic gussets that allow perfect movement to the hips while holding them down nicely. This shape measures in its longest point 1116 inches. In a good quality of coutilie, and with a cluny or Valenciennes lace frill at the top, it can be had ready

A dainty little lounging corset has shoulder straps, and is hardly more than a bust supporter. This is especially suited to slight figures and can be worn by these for all occasions. With an easy morning gown, however, a matinee, or any frock on the empire order in which the waist line is hidden, a stout woman may also wear it to advantage, as in these cases it confines the figure sufficiently. These corsets are also made in white contille, with lace and ribbon trinnming, or else a soft puff of muslin at the bust. Only at the front and side seams are they boned, and the look of a body is given them by a pointed piece at the back, and at either side of the front, to which a short petticoat may be buttoned. This model can be had for \$3.

An elastic corset for cycling, golf, and other athletic pleasures is ideally suited to these sports. This is hardly more than a girdle, but it is shaped into the figure with gussets, corset fashion, at the bust and hips. Like a girdle, too, it has only one opening, which is in front, and that closes with hooks over which the lacing loops. A pulling in or letting out of the string seems to be the only secret for the fitting of many of these elastic corsets.

For riding there is a corset with the lower portion very short, and ending in a wide elastic band that runs from a spoon busk over the hips to the back. This is declared to be most comfortable, and the only proper sort for the saudie. Again, for athletic women who do not care to have the body kept too warm there is a novel thing in stays. This is a ventilative affair made of linen braid or narrow satia ribbon crossed in squares and liberally bound at the up and down strips.

Corsets for fat women are enormously long.

Corsets for fat women are enormously long, but the newest ones are very low set at the bust, which does away with that ugly crowding up of the flesh so long seen. The bottom fits on the hips like a cap in almost a straight line, and is finished with a wide elastic band that stretches or rolls up slightly in sitting. This makes it possible for such stays to be worn without great discomfort, and it is said even that the size of the hips may be reduced through their constant wearing. They are on With an easy morning gown, however, a matinée, or any frock on the empire order in which the

basis of my examination. It was easy to determine on what particular days certain portions of the hair I cut from his head had formed. I found that, beginning with the particles formed on July 2nd terminating with the particles formed on July 2nd terminating with the formations of July 24, the hair had changed from brown to redisjon and links bluist into the property of the formations of July 24, the hair had changed from brown to redisjon much intensity until under the microscope to the young fellows that the same that during that period he had gambled, how the property of the steady of periods for walking. A skirt is worned the point of drag cities of the property of the point of the property of the points of the points of the point of the points of the poi

LIFE ON THE ARID BELT.

RESULTS OF THE SEARCH FOR GOLD WHEN SILVER FELL.

Wonderful Product of the Neglected Gold Prospects - Silver Mining Now Made Profitable - Meantime Agriculture Is Booming and the Expectations of a Phynomenal Caif Crop Are Well Founded. The story of life in the arid belt of the Unit-

ed States during the fiscal year ending on the 30th of last June, as told in the annual reports of the Governors of New Mexico and Arizona to the Department of the Interior, is one of such great interest, in spite of statistical tables and other wearlsome matter, that the reader is pretty sure to wonder what it might have been had some one accustomed to such tasks written it for the general public. For instance, there were the doings in the mine camps. It was only the other day, as it seems, that the whole region was thrown flat by the depression in the price of silver. At a dollar an ounce, and even at 90 cents, the ragged and desolate mine camps had poured out such volumes of smoke from the various kinds of works to be found there as to tinge the ever presen clouds of dust with the most sombre hues while rough-shirted miners and white shirted sporting men had whooped it up day and night with a noise that was not always whelmed b the roar of many stamps in the near-by mills. Then silver went down to 50 cents, and the mills shut down and the miners and sporting men walked out of the region, and those who remained got together and adopted resolutions to the effect that if Wall street didn't loose its clutch on the throat of the great min ing interest of the West, the country would surely go headlong to the bowwows. Having relieved their feelings by passing resolutions, those who remained then passed to a consider ation of where they were at, and found that subject more interesting than a discussion of free coinage, for if there is any one thing the citizen of the great American desert is able to determine quickly and interestingly, it is where he is at.

Thus it happened that the people there found mong other things, that "Arizona has countless numbers of gold-bearing veins," and that whole desert was a region "whose every mountain is seamed with rich veins car rying gold, silver, or copper, and whose every mesa and valley is practically a gold placer, and, what was of more importance, it "cannot long remain undeveloped." They only await the magic touch of capital to produce fabulous returns upon the investment. Those are the words of Gov. L. C. Hughes of Arizona. and the reader of his report is reasonably sure to say "You bet" as he peruses it. So they all set about applying the magic touch to the gold veins. In the White Oaks district of New Mexico was Baxter Mountain. It was a heap of granite, "traversed by effusive rocks, resulting in numerous seams and fissure veins carrying free gold, usually coarse." But "the question of water for mine and milling purposes' had been for a long time so serious that these seams and fissure veins had never been stoped out. It had been more profitable to dig the silver-bearing lead ores of Kelly and Magda lena than to prospect for water at White Oaks, but now things were changed, and the owners or the Baxter Mountain claims went boring for water in the canons and found a-plenty, so that twenty stamps are steadily grinding to powder the neglected breccia of the seams and fissure veins. And then there was the Hillsfissure veins. And then there was the Hillsboro district in Sierra county. The people had known in a general way that placer gold had been found there, but the pay dirt lay from tour to five miles from water—that is to say, the Percha River. It was expensive hauling the sand across the desert, and the profit was small. The cement mines—a reef of conglomerate varying from 100 to 1,500 feet—was better, but only in spots. "Some small fortunes" had been made by discoverers of these "rich streaks in the conglomerate, but to make available the immense treasures of this deposit larger operations" were needed, but capital lad all been locked up in silver. More interesting still was the "quartz veins of the kind known as dike assures" in the district, "Igneous dikes course through the surrounding trachyte formation," "The ore is composed of quartz with pyrites of iron and copper carrying gold and silver. About four ounces of silver to one ounce of gold was the usual proportion in which the precious metals were found." About 200 claims were located over these dike fissures, but, while the proportion was good, the quantity was small. The grade of the ore was so low that only Ss per ton was realized, and, with the high cost of coal on the desert, this was had pay. However, here was gold, and some profit in that was better than no profit in lifty-cent silver. So they began to grub away at the Ss ore until they got down 120 feet below the sage brush and jack rabbit track, and then came a turn in affairs that made their heads swim, for the clean-up showed from three to four ounces of gold alone to the ton, while at the 200 foot level, recently reached. boro district in Sierra county. The people

then came a turn in affairs that made their heads swim, for the clean-up showed from three to four ounces of gold alone to the ton, while at the 200 foot level, recently reached, the yield "has enlarged to eight and ten ounces gold per ton." The question of where they were at was answered in a way that the silver miners of New Mexico had not dreamed of. So says foov. W. T. Thornton of New Mexico, and that is not nearly a half of his story, either. Gov. Hughes of Arizona does not go into detaits as does tooy. Thornton, but he is just as emphatic in his statements. "It is conceded that Arizona has a larger percentage of free milling ores than any other portion of the United States. The present output of gold from the Territory is almost wholly from veins of this character. A record of \$4, 125,000 from free milling ores alone is remarkable, and it is beyond question that not one-tenth of the Territory has yet been prespected. Arizona offers an inexhaustible field and greater inducements to the careful and intelligent miner than any known gold-producing country." Nor is the piling up of gold the only inducement sie offers the miner, for there are "climatic conditions unexcelled by Italy or by any mining country in the world. No hibernating winters, no avalanches. He can spend one day at his mine and the next day at his vineyard or orange grove."

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Meantime the people who had put their money into silver nines—bought holes in the ground with nothing but white nextal at the bottom of the shaft—were seriously considering where they were at personally, regardless of the doings where yellow metal abounded. The mines at Kelly and Magdalena, back of Socorro, were prominent examples. At Kelly the main product was carbonate and other oxidized ores of lead running from 30 to 50 per cent. only in the metal, while the run in silver was very low. The smelter was at Socorro; freight rates and wages in short all expenses were high. What could they do with 50-cent silver? They said they could leave it and go to the poorhouse, but later they, reconsidered the motion, and adopted an amendment.

They determined to conomize. They sorted there had wen prospecting for water, of which there had wenty-five ton plant." The whole story is summed up in the statements that "the low prices of both lead and silver, and the long a twenty-five ton plant." The whole story is summed up in the statements that "the low prices of both lead and silver, and the long haul and consequently high fable that the nearest market, have forced these mines that had a mile further south faine of the fable, which is accomplished, mining will be stimulated here beyond what it has ever been before." even beyond that seen when silver was \$1,29 an ounce. So says the report of Gov. Thornton.

The truth must be told, even though the following soft wall street hear of the fact, and the orange of \$2,17

dried steers looming among the dust clouds on the plains. It was a time to try the souls of even desert cowboys, but some of them and some cattle lived through.

They think now that at most one steer can plok a living over twenty-five acres of average range. They know that alfalfa will grow from three to seven tons to the acre wherever water kisses the soil, and that "two and a haif tons are sufficient to the animal, and that the steer will take on from 175 to 225 pounds in about two and a half months." Then he will sell for \$50 in Kansas City. The cowboy no longer overstocks the range, and he is taking irrigation and alfalfa wherever possible. The Governor of New Mexico says that "there has been shipped this year from this Territory something over 200,000 head of cattle." Arizona was a great shipper also. These were called "feeders," because lean. Both Territories will in future see many more fat cattle shipped than the unique of lean kine.

And this unique of lean kine and ditches that carry the water to the soil; of the grain and the vestables and the fruit, especially vestables and full that can be gathered in winter and shipped to New York to compete with Florida and Hermuda.

Gov. Hughes says of Arizona's "prehistoric civilization" that "here are found the silent marks of myrlads of people, the remains of cities, systems of irrigating canals, and extensive areas of land formerly watered and cultivated from the same." And he observes that "thousands of the secthing population of overcrowded cities are hungry for faria life," and "they must be provided," by rebuilding the irrigation works of the old-time inhabitants. He believes that this "will give homes for millions of farmers, who will add to this bulwark of free government; in the construction of reservoirs and canals it will give enuployment to armies of tollers; the prolife products of the soil will

THE VITALITY OF SEEDS.

One of the Tests They Will Stand Is Cold 500 Degrees Below Zero. From the Literary Digest.

Not long ago it was generally believed that grains of wheat from Egyptian tombs had been made to germinate, and there seemed, therefore, to be no limit to the dormant life of a seed. When these stories were proved to be without foundation there was a general tendency to disbelieve all of a similar kind. Now, however, it seems established that seeds may live, under proper conditions, a great many years, perhaps for centuries; and when we consider that under these circumstances the protoplasm within the seed actually main tains its vitality, this fact is very significant, On the question of how seeds accomplish this much light has been thrown by recent experiments of C. de Candolle, the French botanist, which he describes in the Revue Scien-

tifique. Some parts of his article are as follows: "Seeds that have retained their germinating power are said to possess 'latent life.' This expression lacks precision, for we may ask whether the life of the seeds is completely ar-

whether the life of the seeds is completely arrested or if it is only retarded, and the answers would not be the same in all cases.

"We owe to Messrs, Van Tieghern and Bounier the following experiment, which proves that seeds can, in fact, live for a certain time this retarded life. Three lots of the same number of peas and beans were placed, the first in the open air, the second in a sealed glass tube containing ordinary air, the third in a sealed the containing ordinary air, the third in a sealed the end of two years the seeds of the first in the open air, the second in weight, and nearly all had retained their germinating power. Those preserved in the confined air had increased less in weight and germinated in less number than the preceding. Moreover, the air contained in the tube with them had changed in composition: its proportion of oxygen had fallen to 11.4 per cent., and there was mixed with it 3.8 per cent, of carbonic acid. As to the seeds kept in the carbonic acid, none of them could germinate, and their weight had not changed."

Experiments are then described by M. de Candolle that relate to the wonderful power of resistance to cold displayed by seeds. Experiments aiready made by others show that these seeds may germinate after having been exposed to a temperature of 1,008 below zero, centigrade. Now the researches of Pictet in

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centigrade. Now the researches of Pictet in
his celebrated low-temperature laboratory in
Berlin show that at such a point chemical action totally ceases; hence the active life of the
seeds in question must have been really suspended, and nevertheless they were able to
germinate when planted. In M. de Candolle's
own experiments seeds were subjected once a
different of the seeds however, were subjected once a
different of the seeds, however, were really suspended,
they must be able to live out of contact with air
for a certain time. In order to see whether
they could do this, M. de Candolle kept seeds
under mercury from one to three months without killing them.

In this state of suspended life a seed is in a
consultation of the seeds of the seeds of the seeds,
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that is, it is ready of an explosive mixture; that is, it is ready of an explosive mixture; that is, it is ready of an explosive mixture; that is, it is ready of an explosive mixture; that is, it is ready of the seeds,
which have the seeds to the seeds of the seeds,
and seed, then, is a little bomb, only waiting to
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send out a discharge in the shape of a sprout.

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where they have germinated after a period so
long that it is impos

field or prairie this period may greatly exceed half a century."

M. de Caedolle says, in conclusion:

"These researches of Prof. Peter certainly deserve attention. We must hope that they all be imitated in other countries and in divers kinds of land, for they may reveal very important facts for biology and prehistoric botton, Alphonse de Candolle has already dwelt on the interest it would excite to make borings in the Alphne snows for the purpose of recovering vestiges of the vegetation anterior to the glackal period. It is to be regretted that this idea has never been carried out, for the facts that I have just stated almost make us hope that researches of this kind might lead to the discovery of germs yet capable of growth, although dating from an early epoch."

THE SLEEP OF SERPENTS.

THEIR EYES ARE LIDLESS AND CAN NEVER CLOSE. nt-Eyed Sankes the Most Dangerous-

Puff Adder-Bons That Sleep by Bay in the Bumboos-Methods of Sanke Capture. One of the most curious facts with regard to makes is that their eves are never closed Sleeping or waking, alive or dead, they are always wide-eyed. If we take a dead one and examine it closely we shall soon find the reason there are no cyclids. The eye is protected only by a strong scale which forms a part of the epidermal envelope, and is cast off in the piece with that, every time the reptile moults. This

eye plate is as clear and transparent as glass and allows the most perfect vision, while at the same time it is so hard and tough as perfectly to protect the delicate organ within from the thorns and twigs among which, in flight from enemies, or in pursuit of prey, the reptile so often hurriedly glides.

When we and other warm-blooded animals sleep, our eyelids close to shut out light, while the pupil relaxes or opens. In serpents the action of the pupils is the reverse of ours-it contracts or closes as a cat's does in sunlight.

Only yesterday it was that I saw an example of this in one of my copperhends. These dendly vipers have eyes with a vertical pupil like the cat's. Now, the copperhead was asleep, for the pupil of the eye was hardly apparent.

It appeared like a fine hair-like mark of black apon the eye-ball. With the intention of feeding him, I put a frog Into his cage. On seeing the snake, the frog was instantly alarmed and began jumping wildly against the glass. In one of its leaps it alighted on the head of the copperhead and awoke him. As I sat quite close o the cage I could observe most clearly the pupil dilating. Then the vibrating tongue came forth, feeling the air in his vicinity. He had probably been dreaming of frogs, for, as the creature jumped again, he darted open-mouthed upon it and held it secure in his jaws. His eyes were not now marked with the hair-like line of black as before, but had quite an extensive pupil, vertically clongated, as if enclosed between two segments of a circle. Two hours after he had finished his meal I went again to

the cage. The snake was lying coiled and certainly asleep, with the same fine, black line as before marked across his eyeball from above downward. As I pounded on the cage with my fist to awake him I saw the pupil again slowly dilating until it grow as big as before. Then the inquiring tongue was pushed tremulously forth, and he industriously set out to explore the corners of the cage, searching for another frog.

As the flercest and most terrible of the preda-

tory mammals are the great night-prowling cats, so also in the serpent kingdom the most potent in strength or venom, viz., the viperide and boider, are cat-eyed and nocturnal. Except when they are thirsty you will rarely find them wandering in the daytime. The colubride or common harmless snakes' eyes have round pupils; these snakes sleep at night, being active chiefly during the hours of sunlight.

During extensive travels in the wilder parts of the world in prosecution of the study of snakes I have had many interesting adventures with sleeping ones. Some of these encounters had in them a seasoning of danger, while others were marked by a touch of the ridiculous, but all of them were amusing and instructive, too, inasmuch as they showed the behavior of the sleepers before and after their awaking. I shall never forget my first meeting with a

large puff adder, one of the most deadly of serpenta, in Currie's Kloof, near Grahamstown, in South Africa. Tired and exhausted with the heat of the sun, I had descended to the bed of a dried-up stream to lie down and rest beneath the leafy trees which shader it. I chose a spot more than usually secluded, had taken off my coat and laid it on the grass, and was about to stretch myself on the slope with my feet to a tree that was eld and decaying, when I was struck by the strange beauty of what appeared to be a large fungus, such as often grows on ancient trees. It was quite close to the trunk, between the protruding roots. It was colored differently from all the fungil had previously ferently from all the fungil had previously seen. Deep velvet black and golden yellow it was. In form it was flat and circular and was about eight foot in diameter. Charmed by its curious loveliness, I approached and stooped over to examine it. Horror of horrors! It was a frightful puff adder. At that time I was a beginner, and I knew ittle of snakes except what I heard or read. These dreadful puff adders are undoubtedly among the worst serpents in the world. Persons in South Africa, had died of their bites within the year, and every one told me that they could actually jump backward for the distance of several feet. For a moment I stood there, still stooping, transfixed with fear and astonishment. My blood fett chilling in my veins. Would be jump and kill me as I stood? Knowing well that my

jump backward for the distance of several feet. The moment I stood there, still stooping, the stood feet chilling are and astonishment. My blood feet chilling are also as the stood of the stood o

to unloose his coils. He wanted a few minutes to look round him, and then swam out on the bank, where he was very much surprised and indignant to find himself my prisoner, with my flagers clutching his throat.

While hunting in the hills of Gunapo, in the same island of Trinidad, I had a curious interview with one of the same day-sleeping tree boas. Along one of the streams coming down from the hills I was searching for the Bothrops atron, better known as the dreaded fer de lance. As the banks where theeled surprised with the bed of the streams coming down most usually seen were thickly covered with the bed of the stream, where I could atomost have both banks in view and at the same time the bod of the stream, where I could atomost have both banks in view and at the same time to the stream, where I could atomost have both banks in view and at the same time to some miles un the stream bed when I came to a good with a branch ranging out over its middle. From the water to the branch was five feet or less, and upon the latter, colled and asleep, was a tree boa of the very same kind I had got at the band out.

The collection of the stream is the same time to time the best of the stream was five feet or some miles un the stream bed when I came to a pool with a branch ranging out over its middle. From the water to the branch was five feet or less, and upon the latter, colled and asleep, was a tree boa of the very same kind I had got at the band out.

no doubt whatever. He never moved as I walked right up to him. He hung colled securely in the branches just on a level with my face. I approached till I looked clear into his eyes. The little black silt was carcely apparent, and there he lay within a foot of my nose as soundly asleep as a child in a craille. To take him was casy, yet a little stratagem was requisite to avoid being bitten, for, though innocent of venom, the tree boa can give an ugly bite, since his front teeth are long, curred, numerous, and as fine as needles. To catch him nicely it was necessary to awaken him, and as he was so securely colled in the branch that there was no danger of his falling into the water, I set myself in osition to take him. I held my left hand up two fore him about a yard out from his nose, working my fingers and shaking the hand vigorously about to attract his attention. To awaken him I gave him a smart slap with my open right, withdrawing it quickly below him, the awoke right enough and shot out his head toward the threatoning left, drawing his neck into a living spring the better to enable him to strike it. While he was thus preparing for action and rubbing the sleep out of his eyes as it were, my right hand was slowly coming up from below with the fingers outstretched to serze him around the throat. At last he bit toward the left, and as he recovered himself for a second attack the slowly moving right hand few up, grasning around the throat. At last he bit toward the left, and as he recovered himself for a second attack the slowly moving right hand few up, grasning around the first and seven feet long. Many who will read this saw him afterward in the New York menagerie at Central Park. Doubtless they would have been much more interested in him at the time had they but known the story of his capture.

FILES AND RASPS.

Cutting Them by Hand Was Held to He as Art in Which Power Couldn't Compete. From the Chicago Record.

Rasps and files in the hands of a first-class mechanic rise to the dignity of tools of the first order in a machine shop. To "file square" is a test of skill which has caused many a braggart to lower his crest, and an A 1 vise hand h treasure in a shop where finishing is done on the bench. To file square means to file true o finish the face of the work without marring it with scratches and rounding surfaces, and to do this as a regular everyday thing is an art to be won only through practice and long experience. Files ruin thousands of dollars' worth of work, and files add thousands of dollars to the value of manufactured product

In some of the machine shops of Chicago are gray-haired mechanics who have worn the overalls for forty years and more. They remember well the time when machine-made files were held up to ridicule and scorn, and when all first-class, well-known makes of files were cut by hand. Some of these old fellows still insist that machine-made files are not and never can be as good as the files which are cut by hand, and they carry this prejudice to such an extent that they declare they cannot do good work with the machine-cut files.

It would be difficult for them to tell the difference between the two makes of files, for within comparatively few years machines have been making files that cannot be approached by the most expert file cutters of Sheffield. Files, and many of them, are still cut by hand, and a file cutter is probably the most expert user of a hammer and cold chiese in the industrial world.

Files and rasps are made of steel which varies from the "blistered" steel for the poorer quality of files to the best crucible, or "cast cast" steel, for the higher grades. The blanks are prepared for the file cutter by forging the "tang," or tapered point for the handle, and shaping the steel to the proper form under a die or press. The blanks are thoroughly annealed or softsned, and are perfectly clean and free from scale when laid on the bench of the workman who cuts the teeth.

A file cutter generally works on the same kind of a "cut" year in and year out. This gives him a mechanical perfection which cannot be secured in any other way, and it is said that a workman's hand becomes so accustomed to the spacing that were he to become bilind he could cut just as well.

Files are made of many forms to suit the great variety of work which they are called upon to do, but the "cuts" which give coarseness and fineness to files are comparatively few; they are known as "rough," "bastard," "smooth," and "dead smooth." These are the common "cuts." "Floats" are single-cut files, and double-cut files are made oby crossing the first out with a second cut, thus changing the parallel, unbraken cutting edges of the floats into numerous points.

When a face, or one or more edges or a file, set under the p vere held up to ridicule and scorn, and when all first-class, well-known makes of files were

out with a second cut, thus changing the parallel, unbroken cuttling edges of the floats into numerous points.

When a face, or one or more edges or a file, is left uncut it is said to be "safe." No matter what the form of the file is, whether flat, square, or knife edged, the cutting is done the same way. A short, light, steel cold chied, with a broad, straight cutting edge, is used. The hammer is a curious looking affair, for it is curved somewhat, and the handle is inserted well toward the smaller end. The hammer weighs from one to six pounds. In striking, the workman gives a peculiar pulling blow which raisesthe "burr" and gives the particular cut characteristic of files, and it was this cut that for nearly 200 years prevented inventors from designing machinery which would cut a file equal to the hand-cut article.

The workman sits on a low bench which comes out from a long wide bench. Before him is his anvit, usually a stone block or a slab of iron. The blanks are held in place by straps which pass over the tang and point, and then form a loop or stirrup under the anvil. The workman puts his foot in the loop, and thus holds the chisel between the finger and thumb of the cleft hand, and after each cut moves the blank slightly for the next cut. He does this by lifting the chisel over the burra and then pressing the point of the tool against the

does this by lifting the chisel over the burr and then pressing the point of the tool against the raised edge just out, at the same time loosening the strap so that the blank can be moved. In cutting small files or smooth or dead-smooth files, the hammer blows, movement of the chisel, loosening the straps, moving the blank, tightening the strap and striking the next blow are done so rapidly that they are nearly simultaneous. The float cut is made first, and then the second cut is made. In making the second

ous. The float cut is made. In sit, and then the second cut is made. In the large the second cut the workman strikes that large the second cut the workman strikes that large with less force, thus making a shallower cut. It the flie is to be cut on the other side, the fit is to be cut on the other side, the fit is to be cut on the other side. It is to be cut on the other side, the flie is other that a flat shape, the lead or pewter is grooved or hollowed out to fit the shape.

After cutting, the flies are hardened, for the annealing makes the steel so soft that the first use of the file would bend the cutting edges. Some flies are curved before being tempered. This is done by heating the cut flies to a dull red and bending them to the required curve over a wooden bluck with a wooden mallet. The flies to be hardened are first covered with a mixture of sait and some sort of carbonaceous substance. This covering serves a two-fold purpose; it provides the proper has steed, and by fusing indicates the proper has steed, and by fusing indicates the proper has steed, and by fusing indicates the proper the steed, and by fusing indicates the proper the steed, and by fusing suddenly plunged into that when the flie is suddenly plunged into that gives the flie the temper.

Naturally, a heated fle suddenly cooled will warp more or less according to its form. This, is prevented by giving the flie a "set" in the other direction before it is tempered, so that the tendency to warp actually straightens the flie. When the steel has reached the proper heat, the file is lifted from the fire by the tang and suddenly immersed in cold water, and before it has rown cold it is withdrawn and but in a screw clamp, which keeps it from curving or bending. The tang is then softened by sicking it in melted lead, and then the file is cleaned. From this size flies withdrawn and but in a screw clamp, which keeps it from curving or bending. The tang is then softened by sicking it in melted lead, and then the file is cleaned. From this size flies ar

"REMEMBER LOT'S WIFE, THE MODERN THEOLOGICAL VIEW OF THE LADY'S STRANGE PLIGHT. She Did Not Become a Solid Pillar of Rock Sait, But Was, as It Were, Ves From the Rochester Union and Advertiser, The Rev. Dr. L. H. Squires spoke on "Lot's

Wife" at First Universalist Church, saying: "Perhaps you wonder why we should 'ramember Lot's wife.' Certainly there is not anything very noteworthy about her to remember. There are a great many women whom it is more pleasant and profitable to remember. She had done nothing very great. In fact, there is very little account of her, and that is not very creditable. But perhaps that is besuse women in those days were not thought to be of much account, anyhow. And the records we have were written by men. So woman received but little attention while living or little mention when dead. In this case they have mentioned 'Lot's wife.' You will notice they have not even given the name of Mrs. Lot. She is only 'Lot's wife.' But the historian has done her the honor to mention that 'sne became pillar of salt.' Probably if she had become a living saint there would have been no mention of it. Bible reporters were not so very much unlike modern newspaper reporters. A salt wo-man who 'looks back' gets more notice than the thousand modest, saintly women who go straight forward with their life work.

"In this story of Lot's wife we are obliged to read between the lines and reconstruct the missing links by the aid of a reasonable imagination. The Lot family were residents of Sodom, city which, according to tradition, was locate ed on the low plain on the eastern border of

a city which, according to tradition, was located on the low plain on the eastern border of the Dead Sea. They were warned to fice from the city because of signs of an impending calamity which threatened its destruction. Lot, who was a nephew of Abraham, appears to have been rather more intelligent and righteous than most of the people there. And it seems that Abraham, who dwelt in the high lands on the other side of the Jordan, had foreseen the danger and had sent two messengers to warn Lot, his nephew, to leave the city and escape to the mountains. By their persuasions Lot gathers his family and household effects in the night and instity leaves the city, fiseing first to Zoar, a little town nearer the hills, and afterward up into the mountains.

"But in the hasty fight from the city it seems Lot's wife was left behind. Whether she did not want to go and did not think there was any danger, or whether she waited to pack a trunk, or whether the rest of them ran away from her and left her to carry the things, we do not know. For some reason she turned back and was lost. The city was on fire, Smoke and ashes and sulphurous fumes filled all the air of the valley; suffocated overy living thing; covered, petrified, and burled in bituminous ashes every creature. When they afterward went back and found Lot's wife, they found her dead body a pillar of salt.

"Now, let us pause a little and tay to determine the real character of this event. I can believe almost every word of this account ex, cept the assumption of the supernatural in it-which it seems to me is not at all necessary to account for the whole affair.

"In the first place, Sodom and Gomorrah are not the only cities that have been overthrown and descroyed by convuisions of nature. Hericalanem and Pompeii were surfed under a rain of burning lava, sulphur, and ashes from the aruption of Yesuvius in the year 70 A. D. Many other citles in other patts of the world have been overthrown, destroyed, or burled in the same way.

"Lisbon was overthrown and partly swal-lo

scuption of Vesuvius in the year 70 A. D. Many other cities in other parts of the world have been overthrown, destroyed, or buried in the same way.

"Lisbon was overthrown and partly swallowed up by an earthquake in the year 1755, in 1868 large cities in Equador were swallowed up, Arica and Arequipa in Peru were destroyed, and the sea retreated from the harbor of Arica and returned in a tidal wave which submerged the whole coast and carried a United States steamer two miles inland. This great earthquake has been described by Prof. Von Hochstetter of Arequipa. He says: 'It was Aug. 13, 1868, at five minutes past 5, as earthquake shock was experienced. Half a minute later a terrible noise was heard beneath the earth. A second shock was felt more violent than the first, and then began a swaying motion, gradually increasing in intensity. In the course of their that the inhabitants ran in terror out of their houses into the screets and squares. In the next two minutes the swaying had so increased that the more lightly built houses were east to the ground, and the flying people could scarcely keep their feet.

"And now there followed during two or three minutes a terrible scene. The swaying motion changed into a fierce vertical upbeaval. The subjerranean roaring increased to a deafening thunder. Then were heard the heart pierchn shricks of the wretched people, the bursting of walls, the erashing of falling houses and churches, while over all rolled thick clouds of a yellowish-black dust, which, had they been poured forth many minutes longer, would have suffocated and buried every living creature. Although the shocks had lasted but a few minutes, the whole city was destroyed. Not a building remained uninjured, and there were few which did not lie in shapeless heaps of rolns, while tens of thousands of human beings had been swallowed up."

"The carth's surface is continually undergoing changes, by unheaval or depression. On the 19th of November, 1822, a broad line of the seacoast in Chill, 100 miles in extent, was rais

the seacoast in Chili, 100 miles in extent, was raised from the sea. In 1819 the mouth of the Industrial took place. In 1819 the mouth of the Indus, which had long been closed to navigation, was deepened in places to more than eighteen feet. The fort and village of Lindner were submerged, only the tops of the houses and walls being visible above the water, while at the distance of five miles from this village a hill was raised up where before had been a low plain, which they called the 'Mound of God.'

"Now, all these facts indicate that we need, not look to the supernatural to find a means for the destruction of the cities of the plain. The truth is, as modern travellers tell us, that that plain is a bituminous bog. Naphtha springs abound. Sulphur beds are there. With these conditions under that fierce tropical sun fires are frequent and long-continued. These same sulphur fumes and amoke from the burning bitumen beds may be seen to-day by travellers that Abraham saw when 'Ho got up in the morning and looked toward the land of the plain, and lo! the smoke of the country went up as the smoke of a furnace.

"Now, I think we may take a reasonable view of the destruction of those cities of the plain. There was some natural convulsion, earthquake or volcanic, which overthrew them, submerged them under sulphurous ashes, as Pompeli was burled. Fire lent 41s terrors to the scene. Some might escape, like Lot, who fied to the hills. But those who should remain or turned back, like Mrs. Lot. perhaps in a selfish desire to save some worldly goods, would undoubtedly be overcome and suffocated by the sulphur fumes. Their bodies lying there in proximity to he Dead Sea, under the drifting salt sands, might naturally become incrusted with salt to-day. Lol Mrs. Lot is turned to salt for turning back at a critical time and is preserved to 'point a moral and adorn a tale.'

A HUNTER'S MISADVENTURE.

aught in Two Bear Traps and Held &

SALAMANCA, N. Y., Dec. 28. The experience of E. Beckworth, a young man of Leroy, N. Y., s not paralleled in the history of hunting in Cattaraugus county nor in Potter county, Pa., to which it is contiguous. Young Mr. Beck-worth came here a week ago with two companions to hunt for bears, which are numerous and fat this winter. They had poor success here-abouts, and Beckworth's companions decided to go on into Potter county in search of the game, Beckworth chose to stay in this county and hunt alone, and the party separated. Beckworth was provided with plenty of food, two good blankets, a rifle and a revolver, and had no doubt of his ability to take care of himself and have a good time despite his being alone.

The second day he was alone he struck the trail of a big bear and followed it for three

miles. Then, just as it was coming on night, he stepped into a 100-pound bear trap, which had been set in the woods ten miles from here by Thomas Kans of this city. The trap closed on Beckworth's moccasined legs with such force that he could not release himself. In his struggles he fell into another trap, and being fast by both legs, was nearly helpless. He shouted in vain for assistance, but he was far in the depths of the woods and no one heard him. Firing his rifle to attract help was equally unpredictive of results, and as the night came on fleckworth rolled himself in his blankets as well as he could and ate sparingly of his food.

The next day he fired his gun and revolver at intervals in the hope of attracting attention, but no one exame to release him, and snother night settled down, cold, cheerless, and with a fall of snow, By this time fleckworth's lens were numb with the lack of circulation of blood, as well as the cold, and during the night he determined to kill himself the following day if no one came to his relief. The following morning was Friday and Mr. K. The following morning miles. Then, just as it was coming on night, he